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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,894	08/01/2003	Seimei Ushiro	Q76385	9808

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EXAMINER	
AUSTIN, MELISSA J	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/631,894	USHIRO ET AL.	
	Examiner	Art Unit	
	Melissa Austin	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☒ Claim(s) *3 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority to Japanese application serial Nos. 2002-225670 and 2003-95317.

Drawings

2. Figure 14 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because the chemical formula for methanol in figures 3, 5, and 6 is incorrect. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "85" has been used to designate both rib and opening portion of a bag (specification identifies as 87). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 14, 88, 89, 110. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 87, 100. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct

any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

8. The disclosure is objected to because of the following informalities:

- Pg. 1, ln 16-17: "constantly" and "continually" have the same meaning; therefore, only one of the words need be included in this phrase
- Pg. 2, ln 2: the chemical formula for the methanol aqueous solution is given as: "$CH_3COOH + H_2O$". "CH_3COOH" is the chemical formula for acetic acid, not methanol. All occurrences of this error must be corrected.
- Pg.7, ¶ 2,3: these paragraphs are repeated exactly starting with the last paragraph on pg. 7.
- Pg. 17, ln 12: the text refers to the digital camera C "from above." There is no mention of the camera as designated previously in the specification.
- Pg. 25, ln 2: "a" in "via a the fuel storing section" should be deleted.
- Pg. 26, ln 8: should read "ever", not "every."
- Pg. 27, ln 19: "instead" is misspelled

Appropriate correction is required.

9. The use of the trademark TEFLON has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

10. Claims 3 and 18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

11. Claims 3 and 18, dependent on claims 2 and 17 respectively, require the antifreezing agent to be "filled into" the discharged-solution storing section. Claims 2 and 18 require an antifreezing agent "provided in" the discharged-solution storing section. "Filled into" of claims 3 and 18 provides no further limitation to "provided in" of claims 2 and 17.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

13. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not define what is meant by a "portable terminal," or how the fuel pack of claim 1 would be used in conjunction with the device. For purposes of examination, "portable terminal" is being interpreted as a device such as a PDA or laptop

computer because of the definition of terminal (a device, often equipped with a keyboard and a video display, through which data or information can enter or leave a computer system.[1]).

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claim1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the discharged-solution *recovery section*" in line 14. There is insufficient antecedent basis for this limitation in the claim. The claim is being interpreted as meaning " the discharged-solution *storing section*."

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

17. Claims 11-13, 15, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Prasad et al. (US 2003/0082427).

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[1] *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from INSO Corporation; further reproduction and distribution restricted in accordance with the Copyright Law of the United States. All rights reserved.

18. With respect to claim 11, Prasad discloses a fuel supply for a fuel cell that includes a fuel storage area enclosed by a first flexible inner container (applicant's fuel bag body). The first flexible inner container is positioned within the interior of an outer container (applicant's flexible casing). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) positioned at the opening of the first flexible inner container. The outer container also includes a waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The outer container is flexible as it is constructed of materials such as PEEK, polysulfone, polypropylene, polystyrene blends, and polymer blends, the same materials of which the flexible inner containers are made (pg. 3, [0034], [0028]). The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]).

19. Regarding claim 12, Prasad teaches the elements of claim 11 and also teaches the use of an absorbent material (applicant's desiccant) within the outer container (applicant's casing).

20. Regarding claim 13, Prasad teaches the elements of claim 12 and also teaches a second flexible inner container (applicant's discharge solution bag) in fluid communication with the waste inlet (applicant's discharged-solution recovery port) that is housed within the outer container (pg. 2, [0027]; applicant's casing). This second flexible inner container bounds the waste storage area which may be filled with an absorbent material (pg. 3, [0035]; applicant's desiccant).

21. With respect to claim 15, Prasad teaches a fuel supply for a fuel cell that includes a fuel storage area (applicant's fuel storing section) and a waste storage area (applicant's discharged-solution storing section). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) and waste from the fuel cell is passed through the waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). A movable barrier in the form of first and second inner flexible containers separates the fuel storage area from the waste storage area (pg. 2, [0026-0027]: applicant's deformable sheet member). The waste storage area which may be filled with an absorbent material (pg. 3, [0035]; applicant's desiccant).

22. Regarding claim 16, Prasad teaches the elements of claim 15 as well as a second flexible inner container (applicant's discharge solution bag) in fluid communication with the waste inlet (applicant's discharged-solution recovery port) that is housed within the outer container (pg. 2, [0027]; applicant's casing). This second flexible inner container bounds the waste storage area which may be filled with an absorbent material (pg. 3, [0035]; applicant's desiccant).

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. Claims 1, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) in view of Yamamoto (4,883,724).

25. Regarding claims 1, 7, and 8, Prasad teaches a fuel supply for a fuel cell that includes a fuel storage area (applicant's fuel storing section) and a waste storage area (applicant's discharged-solution storing section). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution outlet (applicant's fuel supply port) and waste from the fuel cell is passed through the waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). A movable barrier in the form of first and second inner flexible containers separates the fuel storage area from the waste storage area. These inner flexible containers are made of materials impervious and chemically stable to the fuel, which may be alcohol (pg. 2, [0026-0028], claim 15: applicant's deformable sheet member). However, Prasad fails to teach a secondary cell for storing power generated by the fuel cell. The Yamamoto reference teaches a fuel cell generating hybrid system in which a storage battery (applicant's secondary cell) is connected to the output side of the fuel cell. This storage battery is charged for recovery with the surplus electric power of the fuel cell

under light- or no-load operation and is used as a backup for the fuel cell under heavy-load operating conditions. (Col. 1, ln 10-25) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a storage battery with the fuel cell as taught by Yamamoto with the fuel supply of Prasad in order to recover power generated by the fuel cell when operating under light-load conditions and to provide power in addition to that provided directly by the fuel cell in heavy-load operation.

26. With respect to claim 9, Prasad and Yamamoto teach the elements of claim 1, and Prasad also teaches an outer container (applicant's casing) containing a first flexible inner bag (applicant's bag body) that encloses the fuel storage area (applicant's fuel storing section). The outer container is flexible as it is constructed of materials such as PEEK, polysulfone, polypropylene, polystyrene blends, and polymer blends, the same materials of which the flexible inner containers are made (pg. 3, [0034], [0028]). A fuel solution outlet (applicant's fuel solution outlet) and a waste inlet (applicant's discharged-solution recovery port) are included in the outer container. The waste storage area (applicant's discharged-solution storing section) is bounded by the inner wall of the outer container and the outer wall of the first flexible inner container. (pg. 5, [0053]; Figure 12)

27. With respect to claim 10, Prasad and Yamamoto teach the elements of claim 9 but fail to teach a heating mechanism to heat the discharge solution in the discharged-solution storing section and the casing. It seems that the use of the fuel cell system of claim 9 would not be practical in large-scale (industrial, vehicle applications) of fuel cells but would be valuable in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section or casing, the section container or casing could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use heaters to raise the temperature to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a heating mechanism for heating the solution in the discharged-solution storing section or casing in order to keep the discharged solution from freezing and possibly rupturing the container.

28. Claims 2-6, 14, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) in view of Yamamoto (4,883,724).

29. With respect to claims 2-6, Prasad and Yamamoto teach the elements of claim 1 but fail to teach the provision of an antifreezing agent in (filled into or coated) the discharged-solution storing section or casing. It seems that the use of the fuel cell system of claim 1 would not be practical in large-scale (industrial, vehicle applications) of fuel cells but would be valuable in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section, the section container could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent either filled into or coated onto the discharged-solution storing section in order to keep the discharged solution from freezing and possibly rupturing the container.

30. Claims 14, 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427).

31. With respect to claim 14, Prasad teaches the elements of claim 11, but fails to teach an antifreezing agent supplied in the casing. It seems that the use of the fuel pack of claim 11 would not be practical in large-scale (industrial, vehicle applications) of fuel cells but would be valuable in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the casing as in claim 11, the casing could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent in the casing in order to keep the discharged solution from freezing and possibly rupturing the casing.

32. With respect to claims 17-20, Prasad teaches a fuel supply for a fuel cell that includes a fuel storage area (applicant's fuel storing section) and a waste storage area (applicant's discharged-solution storing section). Fuel solution is passed from the fuel storage area to the fuel cell through a fuel solution

outlet (applicant's fuel supply port) and waste from the fuel cell is passed through the waste inlet (applicant's discharged-solution recovery port). (pg. 2, [0021], Figure 2) The fuel solution outlet and waste inlet are configured to be connected to a receptacle allowing for the transfer of fluids between the fuel supply and the fuel cell (pg. 3, [0036]). A movable barrier in the form of first and second inner flexible containers separates the fuel storage area from the waste storage area. (pg. 2, [0026-0028], claim 15: applicant's deformable sheet member). However, Prasad fails to teach an antifreezing agent supplied in the discharged-solution storing section. It seems that the use of the fuel cell system of claim 1 would not be practical in large-scale (industrial, vehicle applications) of fuel cells but would be valuable in small-scale fuel cell applications, such as portable electronic devices. These type devices are often used outdoors. If the temperature is cold enough to freeze the solution contained in the discharged-solution storing section, the section container could be ruptured by the expansion of the solution upon freezing. It is common in many arts to use antifreezing agents to avoid freezing. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included an antifreezing agent either filled into or coated onto the discharged-solution storing section in order to keep the discharged solution from freezing and possibly rupturing the container.

33. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasad et al. (US 2003/0082427) and Yamamoto (4,883,724) as applied to claim 1 above, and further in view of Lawrence et al. (US 2002/0197522). Prasad and Yamamoto teach the fuel cell system of claim 1. Prasad also teaches the use of such a fuel system in laptop computers and PDAs (applicant's portable terminal), palm devices, portable televisions radios, compact disc and MP3 players, etc. but does not specifically include cameras or portable telephones. The Lawrence reference teaches the use of a removable fuel cartridge in fuel cell powered electronic devices such as mobile telephones, portable computers, PDAs, and other portable electronic devices. The use of such a fuel cartridge allows for quick and convenient refueling thus alleviating the lengthy periods of time required to recharge batteries. (pg. 2, [0022, 0016]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the fuel cell system as taught by Prasad and Yamamoto into portable electronic devices as

taught by Lawrence in order to avoid the inconvenient length of time required to recharge batteries used in the same devices.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Adrian et al. disclose the combination of a fuel cell and secondary battery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Austin whose telephone number is (571) 272-1247. The examiner can normally be reached on Monday - Friday, 7:15 AM - 3:45 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Ryan
SPE - AU 1745

mja

Melissa Austin
Patent Examiner
Art Unit 1745